IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| In re application of: | Hadian, et al. | ) |
| Serial No: | 10/092,453 | ) Art Unit 2652 |
| Filed: | March 6, 2002 | ) |
| For: | COMPOSITE HEAD ARM ASSEMBLY WITH THERMAL CONTROL OF GRAM LOAD | ) |
| Examiner: | Davis, David D. | ) |
| Attorney Docket: | 3123-427 / 20011.05 | ) |

**AMENDMENT AND RESPONSE TO RESTRICTION REQUIREMENT**

Mail Stop No Fees Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Restriction Requirement dated February 11, 2004, having a shortened statutory period for response set to expire on March 11, 2004, please amend the above-captioned patent application as provided below. This amendment and response is timely filed within the one-month deadline for response.



CERTIFICATE OF MAILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to: Mail Stop No Fees Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this the __ day of March, 2004.

_____ JAMES P. BRODER, Attorney for Applicant–Registration No. 43,514

## Amendment

**Status of All Claims in the Application:**

1-6. (Canceled)

7. (Previously Presented) The disk drive of claim 54 wherein the coefficient of thermal expansion of the first layer is greater than the coefficient of thermal expansion of the second layer.

8. (Previously Presented) The disk drive of claim 54 wherein the coefficient of thermal expansion of the first layer is at least approximately ten percent greater than the coefficient of thermal expansion of the second layer.

9. (Previously Presented) The disk drive of claim 54 wherein the coefficient of thermal expansion of the first layer is at least approximately twenty-five percent greater than the coefficient of thermal expansion of the second layer.

10. (Previously Presented) The disk drive of claim 54 wherein the coefficient of thermal expansion of the first layer is at least approximately fifty percent greater than the coefficient of thermal expansion of the second layer.

11. (Previously Presented) The disk drive of claim 54 wherein each layer is made of a metal.

12. (Previously Presented) The disk drive of claim 54 wherein the first layer is made of steel and the second layer is made of titanium.

13-17. (Canceled)

18. (Currently Amended) ~~The~~ A disk drive ~~of claim 17 wherein~~ comprising:

a drive housing;

a storage disk coupled to the drive housing; and

a head arm assembly coupled to the drive housing, the head arm assembly including an adjuster and a slider coupled to the adjuster, the adjuster including a first layer and a second layer that is secured to the first layer, the first layer having a coefficient of thermal expansion that is different from a coefficient of thermal expansion of the second layer, the adjuster ~~increases~~ increasing the gram load that is applied to the slider as the temperature near the adjuster decreases.

19. (Original) The disk drive of claim 18 wherein the gram load increases at least approximately four percent for a twenty °C decrease in temperature.

20. (Original) The disk drive of claim 18 wherein the gram load increases at least approximately seven percent for a twenty °C decrease in temperature.

21. (Original) The disk drive of claim 18 wherein the adjuster decreases the gram load that is applied to the slider as the temperature near the adjuster increases.

22. (Currently Amended) The disk drive of claim [[17]] 88 wherein the coefficient of thermal expansion of the first layer is greater than the coefficient of thermal expansion of the second layer.

23. (Currently Amended) The disk drive of claim [[17]] 88 wherein the coefficient of thermal expansion of the first layer is at least approximately ten percent greater than the coefficient of thermal expansion of the second layer.

24. (Currently Amended) The disk drive of claim [[17]] 88 wherein the coefficient of thermal expansion of the first layer is at least approximately twenty-five percent greater than the coefficient of thermal expansion of the second layer.

25. (Currently Amended) The disk drive of claim [[17]] 88 wherein the coefficient of thermal expansion of the first layer is at least approximately fifty percent greater than the coefficient of thermal expansion of the second layer.

26. (Currently Amended) The disk drive of claim [[17]] 87 wherein each layer is made of a metal.

27. (Currently Amended) The disk drive of claim [[17]] 87 wherein the first layer is made of steel and the second layer is made of titanium.

28. (Currently Amended) The disk drive of claim [[17]] 86 wherein the head arm assembly includes a load beam and the adjuster is a part of the load beam.

29. (Currently Amended) ~~The~~ A disk drive ~~of claim 17 wherein the head arm assembly includes~~ comprising:

a drive housing;

a storage disk coupled to the drive housing; and

a head arm assembly coupled to the drive housing, the head arm assembly including an arm beam having an adjuster and a slider coupled to the adjuster, the adjuster including a first layer and a second layer that is secured to the first layer, the first layer having a coefficient of thermal expansion that is different from a coefficient of thermal expansion of the second layer ~~and the adjuster is a part of the arm beam~~.

30. (Original) A disk drive comprising:

a drive housing;

a storage disk coupled to the drive housing; and

a head arm assembly coupled to the drive housing, the head arm assembly including an arm beam, a load beam coupled to the arm beam, and a slider coupled to the load beam, wherein at least one of the beams includes an adjuster that increases the gram load that is applied to the slider as the temperature near the adjuster decreases, the adjuster including a first layer and a second layer that is secured to the first layer, the first layer has a coefficient of thermal expansion that is different from a coefficient of thermal expansion of the second layer.

31. (Original) The disk drive of claim 30 wherein the gram load increases at least approximately four percent for a twenty °C decrease in temperature.

32. (Original) The disk drive of claim 30 wherein the gram load increases at least approximately seven percent for a twenty °C decrease in temperature.

33. (Original) The disk drive of claim 30 wherein the adjuster decreases the gram load that is applied to the slider as the temperature near the adjuster increases.

34. (Original) The disk drive of claim 30 wherein the coefficient of thermal expansion of the first layer is greater than the coefficient of thermal expansion of the second layer.

35. (Original) The disk drive of claim 34 wherein the coefficient of thermal expansion of the first layer is at least approximately ten percent greater than the coefficient of thermal expansion of the second layer.

36. (Original) The disk drive of claim 34 wherein the coefficient of thermal expansion of the first layer is at least approximately twenty-five percent greater than the coefficient of thermal expansion of the second layer.

37. (Original) The disk drive of claim 34 wherein the coefficient of thermal

expansion of the first layer is at least approximately fifty percent greater than the coefficient of thermal expansion of the second layer.

38. (Original) The disk drive of claim 30 wherein the first layer is made of steel and the second layer is made of titanium.

39-45. (Canceled)

46. (Currently Amended) The method of claim [[58]] 94 wherein ~~the~~ a coefficient of thermal expansion of the first layer is greater than ~~the~~ a coefficient of thermal expansion of the second layer.

47-53. (Canceled)

54. (Currently Amended) A disk drive comprising:

a drive housing;

a storage disk coupled to the drive housing; and

a head arm assembly coupled to the drive housing, the head arm assembly including an adjuster and a slider coupled to the adjuster; the adjuster including a first layer and a second layer ~~that is secured to the first layer~~, the first layer having a coefficient of thermal expansion that is different from a coefficient of thermal expansion of the second layer, the adjuster changing the gram load that is applied to the slider as the temperature near the adjuster changes.

55. (Currently Amended) A disk drive comprising:

a drive housing;

a storage disk coupled to the drive housing; and

a head arm assembly coupled to the drive housing, the head arm assembly including an adjuster and a slider coupled to the adjuster; the adjuster including a first layer and a second layer ~~that is secured to the first layer~~, the first layer having a modulus of elasticity that is different from a modulus of elasticity of the second layer, the adjuster changing the gram load that is applied to the slider as the temperature near the adjuster changes.

56. (Previously Presented) A disk drive comprising:

a drive housing;

a storage disk coupled to the drive housing; and

a head arm assembly coupled to the drive housing, the head arm assembly including an adjuster and a slider coupled to the adjuster, the adjuster including a first layer and a second layer, the first layer having a different material composition than the second layer, the adjuster changing the gram load that is applied to the slider as the temperature near the adjuster changes.

57-59. (Canceled)

60. (Previously Presented) A disk drive comprising:

a drive housing;

a drive circuitry; and

a head arm assembly coupled to the drive housing, the head arm assembly including (i) a load beam that is electrically isolated from the drive circuitry, (ii) a slider that is connected to the drive circuitry, the slider being supported by the load beam, and (iii) an adjuster that is coupled to the load beam, the adjuster adjusting the gram load applied to the slider based on the temperature of the adjuster.

61. (Previously Presented) The disk drive of claim 60 wherein the adjuster increases the gram load that is applied to the slider as the temperature near the adjuster decreases.

62. (Previously Presented) The disk drive of claim 60 wherein the adjuster decreases the gram load that is applied to the slider as the temperature near the adjuster increases.

63. (Currently Amended) The disk drive of claim 60 wherein adjuster includes a first layer and a second layer ~~that is secured to the first layer~~, ~~wherein~~ the first layer ~~has~~ having a coefficient of thermal expansion that is different from a coefficient of thermal expansion of the second layer.

64. (Previously Presented) The disk drive of claim 63 wherein the coefficient of thermal expansion of the first layer is greater than the coefficient of thermal expansion of the second layer.

65. (Previously Presented) The disk drive of claim 63 wherein the coefficient of thermal expansion of the first layer is at least approximately ten percent greater than the coefficient of thermal expansion of the second layer.

66. (Previously Presented) The disk drive of claim 63 wherein each layer is made of a different composition of metal.

67. (Canceled)

68. (Currently Amended) The disk drive of claim 60 wherein the adjuster includes a first layer and a second layer ~~that is secured to the first layer~~, ~~wherein~~ the first layer ~~has~~ having a modulus of elasticity that is different from a modulus of elasticity of the second layer.

69. (Previously Presented) The disk drive of claim 60 wherein the adjuster is directly secured to the load beam.

70. (Previously Presented) The disk drive of claim 60 wherein the adjuster is incorporated as part of the load beam.

71. (Previously Presented) The disk drive of claim 60 wherein the head arm assembly includes an arm beam and the adjuster is incorporated as part of the arm beam.

72. (Previously Presented) The disk drive of claim 71 wherein the head arm assembly includes a second adjuster that is incorporated as part of the load beam.

73. (Previously Presented) The disk drive of claim 60 wherein the adjuster includes a first layer and a second layer, wherein the first layer has a different material composition than the second layer.

74. (Previously Presented) A method for maintaining a slider within a desired flying height range as temperature changes within a disk drive, the method comprising the steps of:

coupling the slider to a load beam that is electrically isolated from a drive circuitry; and

adjusting the gram load applied to the slider with an adjuster that moves based on the temperature of the adjuster so that the slider is maintained within the desired flying height range.

75. (Previously Presented) The method of claim 74 wherein the step of adjusting includes the step of increasing the gram load that is applied to the slider as the temperature of the adjuster decreases.

76. (Previously Presented) The method of claim 74 wherein the step of adjusting includes the step of decreasing the gram load that is applied to the slider as the temperature of the adjuster increases.

77. (Previously Presented) The method of claim 74 wherein the step of adjusting the gram load includes the step of coupling the adjuster to the slider.

78. (Currently Amended) The method of claim 74 wherein the step of adjusting includes providing an adjuster having a first layer and a second layer ~~that is secured to the first layer~~, the first layer having a coefficient of thermal expansion that is different from a coefficient of thermal expansion of the second layer.

79. (Previously Presented) The method of claim 78 wherein the coefficient of thermal expansion of the first layer is greater than the coefficient of thermal expansion of the second layer.

80. (Previously Presented) The method of claim 79 wherein the coefficient of thermal expansion of the first layer is at least approximately ten percent greater than the coefficient of thermal expansion of the second layer.

81. (Previously Presented) The method of claim 78 wherein each layer is made of a metal.

82. (Previously Presented) The method of claim 78 wherein the first layer is made of steel and the second layer is made of titanium.

83. (Previously Presented) The method of claim 74 wherein the step of adjusting includes incorporating the adjuster as part of the load beam.

84. (Previously Presented) The method of claim 74 wherein the step of adjusting includes incorporating the adjuster as part of an arm beam.

85. (Previously Presented) The method of claim 84 wherein the step of adjusting includes incorporating a second adjuster as part of the load beam.

86. (New) A disk drive comprising:

a drive housing;

a drive circuitry; and

a head arm assembly coupled to the drive housing, the head arm assembly including (i) a slider that is connected to the drive circuitry, and (ii) an adjuster that is coupled to the slider, the adjuster being electrically isolated from the drive circuitry, the adjuster dynamically adjusting the gram load applied to the slider based on the temperature of the adjuster.

87. (New) The disk drive of claim 86 wherein the adjuster includes a first layer formed from a first material, and a second layer formed from a second material that is different than the first material.

88. (New) The disk drive of claim 87 wherein the first layer and the second layer have different coefficients of thermal expansion.

89. (New) The disk drive of claim 87 wherein the first layer has a modulus of elasticity that is different than a modulus of elasticity of the second layer.

90. (New) The disk drive of claim 86 wherein the gram load increases at least approximately four percent for a twenty °C decrease in temperature of the adjuster.

91. (New) The disk drive of claim 86 wherein the head arm assembly includes an arm beam and the adjuster is incorporated as part of the arm beam.

92. (New) The disk drive of claim 91 wherein the head arm assembly includes a second adjuster that is incorporated as part of the load beam.

93. (New) A method for maintaining a slider of a disk drive within a desired flying height range as temperature within the disk drive changes, the method comprising the steps of:

coupling the slider to an adjuster, the adjuster being electrically isolated from a drive circuitry of the disk drive; and

dynamically adjusting the gram load applied to the slider based on the temperature of the adjuster so that the slider is maintained within the desired flying height range.

94. (New) The method of claim 93 wherein the step of coupling the slider to an adjuster includes providing an adjuster having a first layer and a second layer that is formed from a material that is different than a material used to form the first layer.

95. (New) The method of claim 93 further comprising the step of incorporating the adjuster as part of a load beam of the disk drive.

96. (New) The method of claim 93 further comprising the step of incorporating the adjuster as part of an arm beam of the disk drive.

97. (New) The method of claim 95 further comprising the step of adjusting the gram load applied to the slider with a second adjuster that is incorporated as part of a load beam of the disk drive.

**In the Specification:**

Please amend the paragraph of the specification beginning at page 8, line 18, as follows:

The beam body 260 includes a bend 268 that divides the beam body 260 into a first region 270 and a second region 272. The first region 270 is somewhat flat beam shaped and includes a proximal area that is secured to the actuator arm 36 (illustrated in Figure 1) and a distal area that cantilevers away from the actuator arm 36. The second region 272 is also somewhat flat beam shaped. In a relaxed condition, the second region 272 is at an angle relative to the first region 270. The amount of the angle can be varied to suit the design requirements of the load beam 256. For example, suitable angles can be between six and twelve degrees. The beam body 260 can include one or more apertures that reduce the mass of the beam body 260, and many other features. For example, the beam body 260 can include the lifting feature 242 for load/unload operations, one or more limiters for better shock performance, and load beam ~~stiffners~~ stiffeners such as rails.

Please amend the paragraph of the specification beginning at page 11, line 8, as follows:

Stated another way, the present invention utilizes a composite, laminated adjuster 240 with layers 262, 264 having different coefficients of thermal expansion and modulus of elasticity to automatically vary and control gram load as temperature changes and control the flying height over a relatively large range of temperatures. As a result thereof, the present invention thermally controls gram load to maintain the slider with a desired flying height range. The desired flying height range can vary. For example, the desired flying height range can be between approximately 0.3 micro-inches and 0.6 micro-inches. Therefore, the drive can be exposed to more critical environmental temperatures during operation and the performance and reliability is enhanced.

## ELECTION

The Applicants respectfully elect with traverse the claims of Species IV, which Applicants believe comprises at least claims 7-12, 18-38, 46, 54-56, 60-66, 68-70 and 73-83. Additionally, the Applicants have added claims 86-97, of which 86-90 and 93-95 are also believed to read on Species IV. Applicants further respectfully submit that at least claims 7-12, 22-28, 46, 54-56, 60-66, 68-70, 73-83, 86-90 and 93-95 are generic claims which read on each of the Species I-VI as defined by the Patent Office. It is recognized that additional claims may be subgeneric, that is, generic to more than one species but less than all species.

## ARGUMENT

The Applicants respectfully traverse the election requirement with respect to election of a single species as defined by the Patent Office. The Patent Office has determined that the "application contains claims directed to the following patentably distinct species of the claimed invention: Species I: Figures 1-2B; Species II: Figure 2C; Species III: Figure 2D; Species IV: Figures 3A-3B; Species V: Figures 4A-4B; Species VI: Figures 5A-5B." As set forth below, the Applicants submit that the restriction requirement is improper and should be withdrawn.

First, the guidelines of the statutes and the rules govern whether a restriction requirement is proper. More specifically, 35 U.S.C. § 121 states in relevant part: "If two or more independent *and* distinct inventions are claimed in one application, the Director may require the application to be restricted to one of the inventions." (35 U.S.C. § 121; emphasis added).

Further, 37 CFR 1.142(a) states in relevant part: "If two or more independent *and* distinct inventions are claimed in a single application, the examiner in an Office action will require the applicant in the reply to that action to elect an invention to which the claims will be restricted, this official action being called a requirement for restriction (also known as a requirement for division)." (37 CFR 1.142(a); emphasis added).

In the context of a restriction requirement, MPEP § 802.01 defines "independent" as follows: "The term 'independent' (i.e., not dependent) means that there is no disclosed relationship between the two or more subjects disclosed, that is, they are unconnected in

design, operation, or effect, for example: (1) species under a genus which species are not usable together as disclosed; or (2) process and apparatus incapable of being used in practicing the process." (MPEP § 802.01). The MPEP further clarifies the definition of "independent" by providing examples, stating in relevant part: "An article of apparel such as a shoe, and a locomotive bearing would be an example. A process of painting a house and a process of boring a well would be a second example." (MPEP § 806.04(A)). In the present case, the differences between the six species set forth by the Patent Office are not nearly as glaring, and are much less bright-lined than the clear examples expressed above in MPEP § 806.04(A).

For example, all six of the species identified by the Patent Office are directed toward adjusters of a head-arm assembly. All of the adjusters have at least two layers in one form or another. As a consequence, the Applicants submit that the different species set forth by the Patent Office are not independent.

In the Restriction Requirement, the Examiner appears to have drawn a distinction between the components illustrated in Figures 1-53 of the present application based upon the shapes, configurations and/or locations for the adjuster on the head-arm assembly. However, the Patent Office appears to be disregarding that the structural components included in the embodiments illustrated in the Figures are not completely unconnected in design, operation, and effect, as required for a finding of independent inventions.

Moreover, "for purposes of the initial requirement, a serious burden on the examiner may be *prima facie* shown if the examiner shows by appropriate explanation of separate classification, or separate status in the art, or a different field of search as defined in MPEP § 808.02." (Guidelines, MPEP 803; emphasis added). The Applicants respectfully submit that the Patent Office has not adequately demonstrated reasons or examples to support its conclusions. Moreover, the Patent Office has not provided any explanation of separate classification or separate status in the art for the various species, or that different fields of search are required to examine the claims of each species together in one application.

The MPEP also clearly states: "Claims to be restricted to different species must be mutually exclusive. The general test as to when claims are restricted, respectively, to different species is the fact that one claim recites limitations which under the disclosure are

found in a first species but not in a second, while a second claim recites limitations disclosed only for the second species and not the first. This is frequently expressed by saying that claims to be restricted to different species must recite the mutually exclusive characteristics of such species." (MPEP §806.04(f); emphasis added). In other words, for a restriction between two species to be proper, the characteristics of one of the species can only exist to the exclusion of the other species. In the present case, the species set forth by the Examiner do not necessarily follow this requirement.

Thus, these embodiments ("species") are not wholly unconnected in design, operation, and effect. Accordingly, the Applicants submit that examining the embodiments illustrated in Figures 1-5B can potentially be performed together without conducting an additional search. Thus, the restriction requirement should be withdrawn or modified accordingly.

Based on the foregoing, the Applicants assert that the election requirement with respect to the Species is improper, and should be withdrawn. Consequently, the claims of Species I-VI, comprising claims 7-12, 18-38, 46, 54-56, 60-66 and 68-97 (following this amendment), should be examined together as required by the Species designations of the Patent Office, and pursuant to MPEP 802.01 and 803.

## REMARKS

Claims 7-12, 18-38, 46, 54-56, 60-66 and 68-97 are pending in the above-captioned patent application following this amendment. Claims 7-12, 17-38 and 46-85 are subject to a restriction requirement. The Species IV claims, comprising claims 7-12, 18-38, 46, 54-56, 60-66, 68-70 and 73-83, were elected with traverse. Additionally, the Applicants have added claims 86-97, of which 86-90 and 93-95 are also believed to be included in Species IV. The Applicants further respectfully submit that at least claims 7-12, 22-28, 46, 54-56, 60-66, 68-70, 73-83, 86-90 and 93-95 are generic claims which read on each of the Species I-VI as defined by the Patent Office.

In addition, as set forth in greater detail below, the undersigned attorney for the Applicants hereby retracts the previous statement regarding common ownership of the present application and Mallary (US 6,307,719) as of the time the invention herein was made. In view of this retraction, the Applicants acknowledge that Mallary can also be used to reject claims under 35 U.S.C. § 103. Therefore, the Applicants respectfully traverse the previous rejection by the Patent Office of claims 18-21 and 29-38. For the purpose of this traversal, claims 18 and 29 have been amended to include the limitations of their respective base claims.

Moreover, claims 22-28 have been amended to depend directly or indirectly from new claim 86, claim 46 has been amended to depend from new claim 94, and claims 54, 55, 63, 66 and 76 have been amended to remove one or more limitations that are currently believed to be unnecessary. Claims 17, 47-53, 57-59 and 67 have been canceled without prejudice, and claims 86-97 have been added by this amendment for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office pursuant to 65 Fed. Reg. 54603 (September 8, 2000), even though the Applicants believe that the previously pending claims were allowable.

Support for the amendments to the claims and for the new claims can be found throughout the specification, drawings and the previously pending claims. More specifically, support for new claims 86-97 can be found at least in previously pending claims 1-16, 39-51 and 60-85, in Figures 1-5B, and in the specification at page 2, line 23 through page 3, line 15, at page 3, lines 20-25, at page 5, lines 23-27, at page 6, lines 27-32, at page 7, lines 24-26, at page 8, lines 3-5, at page 10, line 5 through page 12, line 17,

at page 13, lines 9-14, at page 13, line 27 through page 14, line 16, and at page 16, line 25 through page 18, line 11.

No new matter is believed to have been added by this amendment. Consideration of the Application is respectfully requested.

**Interview Summary**

On February 17, 2004, the undersigned attorney conducted a telephonic interview with Examiner David D. Davis. During the interview, the undersigned attorney indicated that the above-referenced statement regarding common ownership was erroneous and was made inadvertently, without deceptive intent, in the Response to Office Action filed by the undersigned on November 20, 2003. Further, the Examiner agreed that despite the erroneous statement and subsequent retraction of the statement, the Patent Office is not limited or compromised in any way regarding the prior art references that can be relied upon to reject any or all of the claims at this point in the prosecution. The undersigned attorney wishes to thank the Examiner for his time and assistance during the interview.

**Common Ownership**

The undersigned attorney for the Applicants previously stated in an Amendment and Response to Office Action, filed by Applicants on November 20, 2003, that "the present application and Mallary (US 6,307,719) were, at the time the invention disclosed in the present application was made, owned by Maxtor Corporation." Maxtor Corporation, current assignee of both Mallary and the present invention, has informed the undersigned attorney for the Applicants that this statement is inaccurate. Maxtor Corporation has brought facts to the attention of the undersigned attorney that the assignment to Maxtor of Mallary occurred after the date that the present invention was made. Therefore, the undersigned attorney retracts the previous statement that Mallary and the present invention were commonly owned as of the date the present invention was made, and such statement should be hereinafter disregarded by the Patent Office during prosecution of the present application. Further, it should be noted that this previously-made statement regarding common ownership was made inadvertently by

the undersigned attorney without deceptive intent.

In view of the above-referenced retraction, the Applicants acknowledge that Mallary can potentially be used as a reference in a 35 U.S.C. § 103 rejection of the claims. The Applicants will respond herein to the previous rejection by the Patent Office for all claims that are believed to include the same subject matter as of the time of the previous rejection. More specifically, as set forth below, the Applicants respectfully traverse the rejection under 35 U.S.C. § 103(a) of claims 18-21 and 29-38.

**Rejections Under 35 U.S.C. § 103**

Previously pending claims 6-13, 16 and 45-51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mallary (US 6,307,719) in view of Simmons et al. (US 5,742,452). Further, claims 17-38 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mallary.[1] Claims 6, 13, 16, 17, 45 and 47-51 have been canceled without prejudice herein or were previously canceled. Therefore the rejection of claims 6, 13, 16, 17 and 47-51 is believed to be moot. Claims 7-12 were previously amended to depend from claim 54, claims 22-28 were amended to depend directly or indirectly from new claim 86, and claim 46 was amended to depend from new claim 94. As amended, claims 7-12, 22-28 and 46 are believed to be allowable.

The Applicants respectfully traverse the previous rejection by the Patent Office under 35 U.S.C. § 103(a) of claims 18-21 and 29-38 on the grounds there is no motivation to combine the cited references, and that one or more of these claims are not taught or suggested by the combination of the cited references.

The Patent Office provided in its previous rejection that "Figure 1 of Mallary shows disk drive 30 including a drive housing; storage disk 15 and head arm assembly 5 coupled to the housing. Assembly 5 includes adjuster 34 and slider 10 coupled to adjuster 34. Adjuster 5 [sic] changes the gram load that is applied to the slider 10 as temperature, via power source 19 changes." Additionally, the Patent Office stated that

[1] Although this second 103(a) rejection also states "... in view of Simmons et al (US 5,742,452)", the Applicants believe this is inadvertently carried over from the rejection on the previous page of the Office Action because no description of Simmons et al. is provided in the rejection of claims 17-38. Further, it appears that the two separate rejections under 35 U.S.C. § 103(a) would have been combined if the bases for the rejections were intended to be identical. Regardless, both references are addressed herein.

"Simmons et al discloses in column 7, lines 40-44, materials for a suspension being different with different properties such as thermal expansion, metal, titanium and modulus of elasticity." The Applicants respectfully disagree with the analysis by the Patent Office.

First, claims 18-21 and 29-38 are patentable over the cited combination of references because there is no motivation to use the suspension assembly taught by Mallary in Simmons et al's device. "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure." *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991; Emphasis added). In the present case, neither is found. Even if the combination of references taught every element of the claimed invention (which it does not), without a motivation to combine, a rejection based on a prima facie case of obviousness has been held improper. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). Further, the "mere fact that references *can* be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990; emphasis original and added).

For example, Mallary is directed toward a suspension assembly that uses a power source 19 to direct current to a load beam 30 to reduce downwardly directed gramload force. (Col. 6, lines 8-12). Once the flying height of the head 10 is adjusted and minimized, a frequency of writing data to the storage disk 15 may be adjusted to optimize the number of data bits-per-inch written thereon. (Col. 6, lines 29-32). Thus, Mallary is used during reading and writing to dynamically adjust the flying height of the head relative to the storage disk.

In contrast, Simmons et al. is directed toward an integral head/suspension and a method for making the head/suspension. Simmons et al. discloses the details of the manufacturing processes, but does not recognize the need for dynamically adjusting the flying height of the head above a rotating storage disk based on temperature, or for any other reason. The quoted section of Simmons et al. appears to relate to a means of an initial adjustment of the gram load of the suspension during manufacturing, but such means does not take into account that the gram load or flying height can be continually

adjusted during use of the disk drive. (Col. 7, lines 40-42).

In the present case, the prior art does not clearly suggest the desirability of the resultant combination because there is absolutely no recognition in Simmons et al. of adjusting the gram load of the suspension assembly during operation of a disk drive. Simmons et al. discusses in detail the method of manufacturing, but does not even mention or recognize whether the head/suspension structure can adjust the gram load based on changing temperatures during operation of the disk drive. Therefore, one skilled in the art reading Mallary would not be motivated to combine the suspension assembly in Mallary that uses a power source to adjust the flying height of the head, with a single structure head/suspension that uses materials having different thermal expansion coefficients for adjusting the gram load during the assembly process of the head/suspension.

Absent such suggestion, a person skilled in the art who was looking for a solution to the problem of dynamically adjusting the gram load or flying height of a slider based on the temperature of the disk drive during operation would hardly be disposed, on any objective basis, to consider a reference like Simmons et al., which very cursorily addresses a way to change the gram load of the suspension during manufacture of the suspension.

Additionally, Mallary purportedly solves the problem of dynamically adjusting the flying height of a slider over a storage disk. Therefore, there is no reason to combine Mallary with another device that does not purport to solve this problem. In other words, there is no clear benefit to combining the suspension assembly of Mallary with Simmons et al.

Therefore, the Applicants submit that it would not be proper to combine the references in the manner suggested by the Patent Office. Accordingly, the rejection by the Patent Office is not supported by the cited references. Thus, claims 18, 29 and 30 should be allowed. Because claims 19-21 depend from claim 18, and claims 31-38 depend from claim 30, these claims should also be allowed.

Second, the Applicants submit that Simmons et al. does not mention in any respect materials for a suspension being formed from metals, e.g., titanium, and/or being formed from materials having different moduli of elasticity. As one example,

dependent claim 38 is directed toward a disk drive having an adjuster that requires that "the first layer is made of steel and the second layer is made of titanium." Thus, claim 38 is not taught or suggested by the cited combination of references, and is believed to be patentable.

**New Claims**

New claims 86-97 have been added by this amendment. New claims 86-97 are of a slightly different scope than the previously pending claims. However, claims 86-97 are believed to be allowable in view of the cited references.

For example, new claim 86 is directed toward a disk drive that requires "a drive housing; a drive circuitry; and a head arm assembly coupled to the drive housing, the head arm assembly including (i) a slider that is connected to the drive circuitry, and (ii) an adjuster that is coupled to the slider, the adjuster being electrically isolated from the drive circuitry, the adjuster dynamically adjusting the gram load applied to the slider based on the temperature of the adjuster." In view of the cited references, claim 86 is believed to be allowable. Because claims 22-28 and 87-92 depend directly or indirectly from claim 86, they are also believed to be allowable.

New claim 93 is directed toward a "method for maintaining a slider of a disk drive within a desired flying height range as temperature within the disk drive changes, the method comprising the steps of: coupling the slider to an adjuster, the adjuster being electrically isolated from a drive circuitry of the disk drive; and dynamically adjusting the gram load applied to the slider based on the temperature of the adjuster so that the slider is maintained within the desired flying height range." In view of the cited references, claim 93 is believed to be allowable. Because claims 46 and 94-97 depend directly or indirectly from claim 93, they are also believed to be allowable.

## CONCLUSION

In conclusion, the Applicants respectfully assert that all of the pending claims, including claims 7-12, 18-38, 46, 54-56, 60-66 and 68-97, should be examined together, and that the restriction requirement is improper and should be withdrawn. Alternatively, the Applicants submit that the Group IV claims, comprising claims 7-12, 18-38, 46, 54-56, 60-66, 68-70, 73-83, 86-90 and 93-95 should be examined together herein and that all of the claims are in condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-672-0454 for any reason that would advance the instant application to issue.

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Respectfully submitted,

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